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09/902,577	07/12/2001	Lloyd Clarke	14560.0004	3628

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EXAMINER	
DESHPANDE, KALYAN K	

ART UNIT	PAPER NUMBER
3623	

DATE MAILED: 09/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/902,577	CLARKE ET AL.	
	Examiner	Art Unit	
	Kalyan K. Deshpande	3623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 July 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *4/14/2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Introduction

1. The following is a non-final office action in response to the communications received on July 12, 2001. Claims 1-19 are now pending in this application.

Information Disclosure Statement

2. The examiner has reviewed the patents supplied in the Information Disclosure Statement (IDS) provided on April 14, 2003.

Specification

3. The abstract of the disclosure is objected to because it exceeds the maximum allowable words. The abstract should be reduced to 150 words or less. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 15 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 15 is dependant on claim 13. Claim 13 and the preceding claims from which claim 13 depends recite subject matter relating to determining the profitability of transporting a load from node A to node B based on the calculation of the marginal value of a load at node A using linear programming. Claim 15 recites the subject matter of searching a database containing offers and determining the profitability of each offer. The relationship between searching a database for offers

and calculating the profitability of transporting a load is unclear since none of the claims from which claim 15 depends recite subject matter about offers.

Claim Rejections - 35 USC § 101

6. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

7. Claims 1-19 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

The basis of this rejection is set forth in a two-prong test of:

(1) whether the invention is within the technological arts; and

(2) whether the invention produces a useful, concrete, and tangible result.

For a claimed invention to be statutory, the claimed invention must be within the technological arts. Mere ideas in the abstract (i.e., abstract idea, law of nature, natural phenomena) that do not apply, involve, use, or advance the technological arts fail to promote the "progress of science and the useful arts" (i.e., the physical sciences as opposed to social sciences, for example) and therefore are found to be non-statutory subject matter. For a process claim to pass muster, the recited process must somehow apply, involve, use, or advance the technological arts.

Mere intended or nominal use of a component, albeit within the technological arts, does not confer statutory subject matter to an otherwise abstract idea if the component does not apply, involve, use, or advance the underlying process.

In the present case, claims 1-19 only recite an abstract idea. The recited steps of merely performing a mathematical analysis to determine the value of transporting a

load does not apply, involve, use, or advance the technological arts since all of the recited steps can be performed in the mind of the user or by use of a pencil and paper. These steps only constitute an idea of how to determine the profitability of transporting a load from one location to another.

Although the recited process produces a useful, concrete, and tangible result, since the claimed invention, as a whole, is not within the technological arts as explained above, claims 1-19 are deemed to be directed to non-statutory subject matter.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-6, 8, 10-11, and 17-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Hillier (Hillier, Frederick S., Liberman, Gerald J., "Introduction to Operations Research", Sixth Edition, McGraw-Hill, 1995.).

As per claim 1, Hillier teaches:

A method of managing transportation demand and capacity comprising:

creating a network flow model comprised of a plurality of nodes, each node representing a specific location (see p. 305-306 and 356; a network consists of points and lines, where the points are called nodes. Table 9.1

gives examples of nodes as specific locations, including intersections, airports, and work centers.);

calculating the duals of a dual linear program based on the network flow model to determine the marginal value of a unit of capacity at a source node and the marginal value of a unit of capacity at a destination node (see p. 40, 306, and 315-316; where the duals of a dual linear program are solved and the slope of the function is the marginal return);

calculating the value of transporting a load from the source node to a destination node based on the marginal values of a unit of capacity at the source node and destination node (see p. 306; where Z is the total shipping costs and Z is calculated by solving the linear program incorporating the marginal returns at each node);

making a transportation decision based on the calculated value of transporting the load (see p. 304, 307, 329, and 864; where the minimum transportation costs are determined and a transportation example is provided to demonstrate decision making based on minimum transportation costs. Decision analysis is also further discussed).

As per claim 2, Hillier teaches:

The method of claim 1, wherein the network flow model is comprised of a plurality of nodes, each representing a specific location at a specific time (see p. 356 and figure 8.2 on p. 306; a network consists of points and lines, where the points are called nodes. Table 9.1 gives examples of nodes as

specific locations, including intersections, airports, and work centers. Figure 8.2 graphically displays nodes).

As per claim 3, Hillier teaches:

The method of claim 2, wherein the source node and the destination node are connected by an arc, the arc having a variable associated with the arc, the variable representing a number of units of capacity to be moved between the source node and destination node (see p. 356 and figure 8.2 on p. 306; where the line connecting the nodes is called an arc. Figure 8.2 graphically displays the nodes connected by arcs and the arcs having the number of units of capacity to be moved associated with it).

As per claim 4, Hillier teaches:

The method of claim 3, wherein the network flow model includes constraints at each node representing conservation of flow (see p. 34, 61, and 306; where equations for the net flow conservation constraints is explained and given).

As per claim 5, Hillier teaches:

The method of claim 4, wherein the arc has an upper bound representing the demand for the loads to be transported between the source node and the destination node, and the arc has a lower bound representing commitments for loads to be transported between the source node and the destination node (see p. 313-314; where the decision variable has both a lower and upper bound. The upper bound is defined as the amount

requested (the demand) from each node and the lower bound is minimum amount to be transported to the node (the amount committed)).

As per claim 6, Hillier teaches:

The method of claim 5 further comprising: forecasting the demand between the source node and the destination node based on historical data (see p. 808; where forecasting can be done by evaluating a time series, thus evaluating historical data).

As per claim 8, Hillier discloses:

The method of claim 2, further comprising: solving the dual linear program associated with the network flow model to determine the marginal value of a unit of capacity at the source node and the marginal value of a unit of capacity at the destination node (see p. 40, 306, and 315-316; where the duals of a dual linear program are solved and the slope of the function is the marginal return).

As per claim 10, Hillier teaches:

The method of claim 2, further comprising: creating a matrix containing the marginal value of a unit of capacity at each node in the network flow model up to a predetermined time in the future (see p. 19-20, 324 and 326; where the marginal values at each node are placed in a tabular form. The tabular form is further stored as inputs in a database. Both the tabular form and the database are matrices).

As per claim 11, Hillier discloses:

The method of claim 10, further comprising: periodically updating the matrix values by resolving the duals of a linear program associated with the network flow model (see p. 19-20; where databases and management information systems can provide up-to-date inputs for the network flow model. These inputs include marginal values at each node and are stored in the database, where the database is a matrix. Hillier further gives an example of a study done at Yellow Freight System, Inc., describing their system inputs being periodically updated).

As per claim 17, Hillier discloses:

The method of claim 1, wherein the transportation decision is used in a scenario evaluator (see p. 304, 307, 329, and 864; where the minimum transportation costs are determined and a transportation example is provided to demonstrate a scenario for decision making based on minimum transportation costs. Decision analysis is also further discussed).

As per claim 18, Hillier discloses:

A method of managing transportation demand and capacity, comprising:

Creating a matrix containing the marginal value of a unit of capacity at each node in a network flow model up to a predetermined time in the future by solving the duals of a linear program associated with the network flow model (see p. 324 and 326; where the marginal values at each node are placed in a tabular form. The tabular form is further stored as inputs in a database. Both the tabular form and the database are matrices);

Periodically updating the marginal values in the matrix by resolving the duals of a linear program associated with the network flow model (see p. 19-20; where databases and management information systems can provide up-to-date inputs for the network flow model. These inputs include marginal values at each node and are stored in a database where the database is a matrix. Hillier further gives an example of a study done at Yellow Freight System, Inc., describing their system inputs being periodically updated);

Calculating the profitability of transporting a load based on the marginal value of a unit of capacity at a source node and the marginal value of a unit of capacity at a destination node (see p. 306; where Z is the total shipping costs and Z is calculated by solving the linear program incorporating the marginal returns at each node); and

Making a transportation decision based on the profitability calculation (see p. 329 and 864; where decision analysis are discussed and a decision based on the solution to the minimum cost flow problem is made).

As per claim 19, Hillier discloses:

A method of managing transportation demand and capacity, comprising:

Calculating the marginal value of a unit of capacity at a source node and a destination node in a network flow model by solving the duals of a linear program associated with the network flow model (see p. 40, 306,

and 315-316; where the duals of a dual linear program are solved and the slope of the function is the marginal return);

Calculating the profitability of transporting a load based on the marginal value of a unit of capacity at the source node and the marginal value of a unit of a unit of capacity at the destination node (see p. 306; where Z is the total shipping costs and Z is calculated by solving the linear program incorporating the marginal returns at each node); and

Making a transportation decision based on the profitability calculation (see p. 304, 307, 329, and 864; where the minimum transportation costs are determined and a transportation example is provided to demonstrate decision making based on minimum transportation costs. Decision analysis is also further discussed).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claims 7, 9, and 12-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hillier (Hillier, Frederick S., Liberman, Gerald J., "Introduction to Operations Research", Sixth Edition, McGraw-Hill, 1995.).

As per claim 7, Hillier discloses:

The method of claim 5, wherein the arc has an associated average cost (see p. 307-309; where the cost per unit distributed is associated with the arc and is graphically displayed in figure 8.3).

As per claim 7, Hillier fails to teach:

the arc has an associated average revenue.

Hillier teaches of the relationship between profitability, revenue and costs, where profitability is determined by subtracting costs from revenue (see p. 40). The advantages of associating a revenue value and a cost value with the transportation of a load and further graphically associating it to an arc connecting two nodes on a network flow model are that it facilitates a user's ability read and comprehend the network flow model, provides the ability to compute the profitability of transporting a load from one node to a second node, and to make a business decision based on profitability. It would have been obvious at the time of the invention for one of ordinary skill in operations management to associate revenue to an arc on a network flow model in order to facilitate a user's ability read and comprehend the network flow model, provide the ability to compute the profitability of transporting a load from one node to a second node, and to make business decisions based on profitability.

As per claim 9, Hillier discloses:

The method of claim 2, wherein the source node and the destination node are connected by a plurality of arcs, each arc having an associated cost (see p. 307-309; where the cost per unit distributed is associated with the arc and is graphically displayed in figure 8.3).

As per claim 9, Hillier fails to disclose:

each arc having an associated revenue

Claims 9 recites a limitation already addressed by the rejection of claims 7; therefore the same rejection applies to this claim.

As per claim 12, Hillier teaches:

The method of claim 11, further comprising: calculating the profitability of transporting a given load from A to B according to the equation: profitability = Revenue – Cost (see p. 40; where actual profit is derived from sales revenue minus direct and indirect costs).

As per claim 12, Hillier fails to teach:

profitability = Revenue – Cost - Val (A) + Val (B), where in Val (A) and Val (B) are the marginal value of a unit of capacity at location A and location B, respectively.

Hillier further describes that revenue and costs can be broken down into components that can be summed into the overall revenue and cost values. For example, Hillier initially decomposes costs into direct and indirect costs (see p. 40). The advantages of separating and listing the components of the cost and revenue allow for management to determine which elements can be improved (reduced if the element is a cost, increased if the element is revenue) such that profitability is increased and thereby making business decisions that increase profitability. The marginal value of a unit of capacity at location A and location B are also components of the revenue and costs. It would have been obvious at the time of the invention to one of ordinary skill in

operations or business management to separate and list the components of cost and revenue when calculating profitability, including the marginal value of a unit of capacity at location A and location B, in order to determine which elements of cost and revenue can be improved (such as whether the marginal value of a unit of capacity at location A is greater than the marginal value at location B) such that profitability is increased thereby making business decisions that increase profitability.

As per claim 13, Hillier discloses:

> The method of claim 12, wherein the marginal values of a unit of capacity are obtained from the matrix (see p. 19-20; where databases provide up-to-date input to be used by the network flow model, where the databases is the matrix).

As per claim 14, Hillier teaches:

> The method of claim 13, further comprising:
>
> using the profitability calculation to make a business decision (see p. 40; where the profitability is calculated by subtracting the cost from the revenue and a business decision is made based on the relationship between profitability, costs and revenue. For example, Hillier describes increasing marketing sales (costs) will result in increased sales (revenue)).

As per claim 14, Hillier fails to teach:

> a) deciding whether or not to accept an offer to transport a load at a specified contracted price over a specified time period;

b) prioritizing a plurality of offers to transport loads based on profitability;

c) determining a contracted price to offer for transporting a load;

d) determining a price to offer a shipper, for soliciting the shipper to transport a load by an idle unit of capacity;

e) determining a spot price for transporting a load;

f) selecting a mode of one of solo, team, rail, third party, regional, or Canadian; and

g) assigning a specific unit of capacity and a specific driver to a particular load.

Hillier teaches making a business decision based on profitability (see p. 40), though he fails to explicitly teach making a transportation decision based on profitability. The purpose of a business for profit is to increase the value of the business. Making business decisions based on increasing profitability increases the value of the business. Business decisions based on increasing profitability include transportation decisions. It would be obvious at the time of the invention to one of ordinary skill in the art of business management to make business decisions based on profitability, including transportation decisions, in order to increase the value of the business.

As per claim 15, Hillier teaches:

the method of claim 13, further comprising: searching a database for up-to-date inputs to be used in calculations and for making business decisions (see p. 19-20; 307, 313, 324 and 326; Demand for shipment of loads to

destinations/nodes are calculated and stored in a tabular form which is used as input into a database.) and determining profitability in order to make business decisions (see p. 40, 306-307 and 312-314; Hillier teaches determining the profitability of each demand where the total shipping cost is determined to minimize the transportation costs thus increasing profitability).

Hillier fails to specifically teach:

offers to have loads shipped, the profitability of each offer, and prioritizing the offers based on profitability.

Although Hillier does not explicitly teach the database containing a plurality of offers to ship loads, the demand for each destination could be associated with offers to ship loads to destinations in order to meet the shipment demand required of each destination. Offers could be matched with the demand requirements since the demand provides information regarding the costs and profitability of transporting a load to a destination. It is also old and well-known in business transportation management to make decisions based on profitability (see p. 40). Therefore, at the time of the invention, it would have been obvious to a person of ordinary skill in the art of business transportation management for the system of Hillier to have offers included in its database, determine the profitability of each offer, and prioritize the offers based on profitability because selecting offers would allow a user to meet the specific demand requirements of transporting loads to destinations while taking into account profitability, and thus facilitating the transportation decision making process based on profitability, which is a goal taught by Hillier as discussed above. Furthermore, prioritizing the offers

based on profitability would enable a user to quickly and easily view and determine which offer to accept, which also enhances the overall transportation decision making process based on profitability, which is a goal taught by Hillier as discussed above.

As per claim 16, Hillier teaches:

> The method of claim 15, further comprising: spidering a database connected to a network to search for offers (see p. 19-20; where the marginal values at each node are placed in a tabular form and the tabular form is further stored as inputs in a database).

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following are pertinent to the current invention, though not relied upon:

Asthana et al (U.S. Patent No. 5265006) teaches a method and apparatus for demand scheduled partial load carrier planning system.

Wedelin (U.S. Patent No. 5343388) teaches a method and apparatus for an resource allocation optimization system using linear programming.

Huang et al (U.S. Patent No. 4700295) teaches a complete supply chain system.

Jameson (U.S. Patent No. 6032123) teaches a resource allocation system using linear programming.

Jacobs et al (U.S. Patent No. 6076067) teaches a vehicle assignment model using a decomposition strategy.

Huang (U.S. Patent No. 6212562) teaches a resource management system utilizing capacity constraints.

Ye (U.S. Patent No. 6374227) teaches a resource allocation system using an optimizer file and engine with a cutting strategy.

Weber et al (U.S. Application No. 2002/0156663) teaches a supply chain management system where the system is optimized based on a user defined supply chain model.

Adler (U.S. Application No. 2002/0169658) teaches a set of modeling and analysis tools to facilitate strategic decision making.

Kraft (Kraft, Edwin R., "A Reservations-Based Railway Network Operations Management System", University of Pennsylvania, 1998) teaches a system optimizing railway-cars allocation for different segments.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kalyan K. Deshpande whose telephone number is (571) 272-5880. The examiner can normally be reached on M-F 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tariq Hafiz can be reached on (571) 272-6729. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

kkd

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